0.24 mm Aperture Grill Pitch

Full scan screen
that gives an
edge-to-edge
image

On Screen Display
Menu

Auto Sizing and Centering
Automatically adjusts the
size and centering

Reset

Input Switch:
lets you connect two computers
using one monitor (Input 1 and
Input 2).

F D Trinitron ®, anti-
reflective and anti-
static screen coating

Power: On/Off switch
& LED Status
Indicator

Image adjustment
controls to operate
on-screen
display menus

hp p1120

hp p1120
D8915
21-inch Color Monitor
(19.8-inch Viewable Image)

User's Guide

Notice

The information contained in this document is subject to change without notice.

Hewlett-Packard makes no warranty of any kind with regard to this material, including, but not limited to, the implied warranties of merchantability and fitness for a particular purpose.

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Important Safety Instructions

WARNING   For your safety always connect equipment to a grounded wall outlet. Always use a power cord with a properly grounded plug, such as the one provided with the equipment, or one in compliance with your national safety standards. This equipment can be disconnected from the power by removing the power cord from the power outlet. This means the equipment must be located close to an easily accessible power outlet.

To avoid electrical shock, do not open the monitor's cover. There are no user-serviceable parts inside. Only qualified service personnel should service these parts.

Make sure your PC is powered off before connecting or disconnecting a display peripheral.

Working in Comfort

Thank you for selecting HP monitor equipment.

To optimize your comfort and productivity, it's important that you set up your work area correctly and use your HP equipment properly. With that in mind, we have developed some setup and use recommendations for you to follow based on established ergonomic principles.

You can consult the online version of Working in Comfort preloaded on the hard disk of HP computers, or visit HP's Working in Comfort web site at:

http://www.hp.com/ergo/

CAUTION   The monitor is quite heavy (the weight is shown in the technical specifications). We recommend you ask the assistance of a second person when lifting or moving it.

The lightning flash with arrowhead symbol, situated within an equilateral triangle, is intended to alert the user to the presence of uninsulated "dangerous voltage" which may be of sufficient magnitude to constitute a risk of electric shock.

The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and servicing instructions in the literature accompanying the appliance.

What Your New Monitor Offers

Your HP monitor is an FD Trinitron 21-inch (19.8-inch viewable image), high resolution, multi-synchronous color monitor. Multi-synchronous means that the monitor supports a range of video modes. It is optimized for use with all Hewlett-Packard computers.

Your HP color monitor has the following features:

- A 21-inch FD Trinitron tube with a 19.8-inch viewable image, 0.24 mm aperture grill pitch for excellent graphics and an anti-glare coating to minimize reflection.

- Support of video modes up to 1800 x 1440 at 80 Hz refresh rates.

- Image adjustment using on-screen display menus. Includes color temperature adjustment and image manipulation controls to optimize the quality and position of the image.

- Monitor power management system (VESA[1] standard) controlled from suitably equipped HP computers to automatically reduce the power consumption of the monitor. As an ENERGY[2] partner, HP has determined that this product meets the ENERGY STAR guidelines for energy efficiency.

- Monitor Plug and Play capability (VESA DDC1/2B standard) that enables the monitor to identify itself to suitably equipped HP computers.

- Compliance with ISO 9241-3/-7/-8 ergonomic standards.

- Complies with MPRII guidelines for upper limits of electrostatic and magnetic field emissions, from the Swedish National Board for Measurement and Testing.

- Your HP monitor complies with TCO99 requirements. (Refer to "TCO99 Ecology Energy Emissions Ergonomics" on page 36).

- Your monitor is Blue Angel compliant. Its cathode ray tube does not contain cadmium.

- HP guarantees the availability of the spare parts for a period of 5 years after production stop of the model.

1. VESA is the Video Electronics Standards Association

2. ENERGY STAR is a trademark of United States Environmental Protection Agency (EPA)

Setting Up Your Monitor

Where to Place the Monitor

Place your monitor on a flat sturdy surface. Ensure the operating site is free from excessive heat, moisture, and sources of electromagnetic fields. Sources of electromagnetic fields include transformers, motors and other monitors.

Connecting the Cables

1   Before you connect any cables, refer to the safety instructions at the beginning of this manual. Make sure your computer and monitor are switched off.

2   Connect the video input cable (it has a 15-pin plug) to one of the video outlets on your computer. You can use both outlets to connect two computers.

3   Tighten the thumbscrews on the plug.

4   Connect the power cord to the monitor.

5   Plug the power cord into the power outlet.

Video Cables

2

1

Video Cables

Power Cords
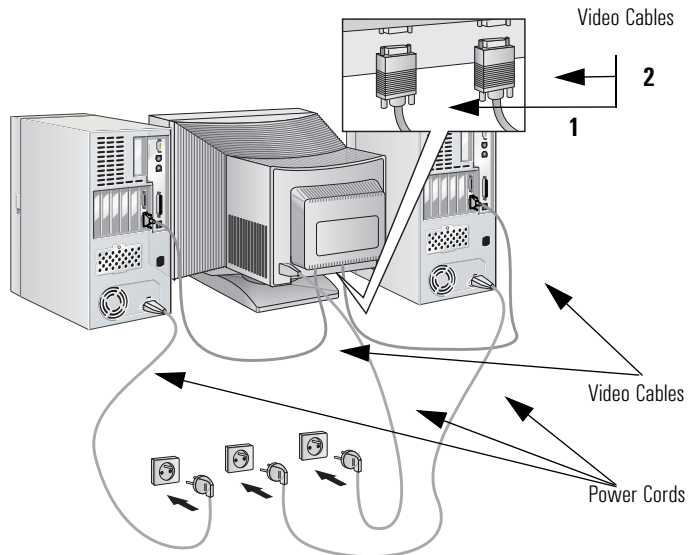
NOTE   The location of your computer's video cable connector may be different to the one shown. Refer to the manual that came with your computer, if necessary.

How To Install The Drivers

Windows 95 or Windows 98 Operating Systems:

In order to take advantage of the Plug & Play functionality of your Windows 95/98 operating system, HP Monitors come with a driver that lets you gain full optimization of your monitor.

To install this driver follow these steps:

1   Click the 'Start' button.

2   Select 'Settings' and then Click 'Control Panel'.

3   Double-click the 'Display' icon and select the 'Settings' tab.

4   Select the 'Advanced Properties' tab.

5   Select the 'Monitor' tab and then click the 'Change' button in order to select the model of HP Monitor you are using.

6   Click the 'Have Disk...' button.

7   Click the 'Browse...' button.

8   Find and select the '**HPMON_XX.INF**' file on your CD ROM under the '\Driver' directory.

9   Press the 'OK' button and select your monitor type in the 'Models' box.

Your operating system and your HP Monitor are now set up to work in optimum conditions.

If your Windows 95/98 version is different or you need more detailed installation information, please refer to Windows 95/98 user's manual.

HP regularly updates the **HPMON_XX.INF** driver each time a new monitor is released. To download the latest up-to-date version, visit our HP Monitors Support web site at:

http://www.hp.com/go/monitorsupport

Using Your Monitor

The illustration below shows the location of the function keys which operate the monitor.
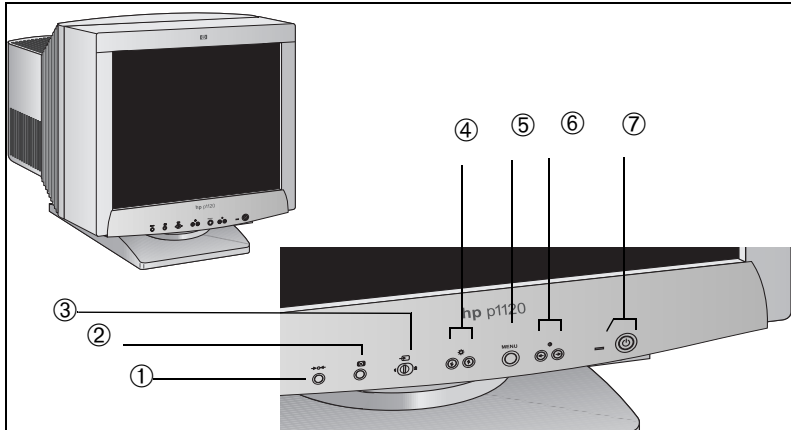

Reset Button

1 This button ⇥0⇤ resets the adjustments to the factory settings.

Auto Sizing and Centering Button

2 This button ⊞ automatically adjusts the size and centering of the picture.

Input Switch

3 This switch selects the INPUT 1 (video input 1 connector: ⊶) or INPUT 2 (video input 2 connector: ⊷) video input signal.

Brightness Buttons

4 This button ☼ displays the Brightness/Contrast menu. These buttons ⇓ / ⇑ let you select the menu items.

Menu Button

5 This button ▭ displays the main menu.

Contrast Buttons

6   This button ◖ displays the Brightness/Contrast menu. Use these buttons ⇐ / ⇒ to make the required adjustments.

Power Switch and Indicator

7   This button ⏻ turns the monitor on and off. The power indicator ⊏⊐ lights up in green when the monitor is turned on, and either flashes in green and orange or lights up in orange when the monitor is in power saving modes.

NOTE   If the power management function of your computer is working properly, you do not need to switch the monitor off or on. This occurs automatically.

Using the On-Screen Menu

The following is an overview showing how to use the On-Screen Menu facility using the ▭, ⇩ / ⇧ and ⇦ / ⇨ buttons.

To display the main MENU.

1   Press the ▭ button to display the main MENU on your screen.

Menu

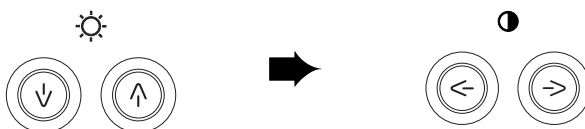### To select the menu you want to adjust.

2   Press the ⇩ / ⇧ buttons to highlight the desired menu. Press the ▭ button to select the menu item.
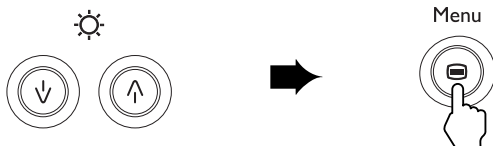
Menu

To adjust the menu.

3   Press ⇩ / ⇧ the buttons to select the item you want to adjust.
4   Press the ⇦ / ⇨ buttons to make the adjustment.

To close the menu.

5   Press the ▭ button once to return to the main MENU and twice to return to normal viewing. If no buttons are pressed, the menu closes automatically after about 30 seconds.

Menu

Resetting the adjustments

1 Press the →0← (Reset) button. See page 23 for more information on resetting the adjustments.
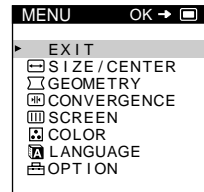
→ ○ ←

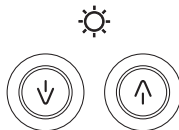## Selecting the On-Screen Menu Language

English, French, German, Spanish, Italian, Dutch, Swedish, Russian and Japanese versions of the on-screen menus are available. The default setting is English.

To select a language of your choice

1 Press the ▭ button.

Menu

```
MENU        OK → ▭
►   EXIT
    SIZE/CENTER
    GEOMETRY
    CONVERGENCE
    SCREEN
    COLOR
    LANGUAGE
    OPTION
```

2 Press the ⇩ / ⇧ buttons to highlight LANGUAGE.

```
LANGUAGE
►ENGLISH
 FRANÇAIS
 DEUTSCH
 ESPAÑOL
 ITALIANO
 NEDERLANDS
 SVENSKA
 РУССКИЙ
 日本語
```

3 Press the ▭ button again.

4 Press the ⇓ / ⇑ buttons to select a language.

- ENGLISH
- FRANÇAIS:
- DEUTSCH:
- ESPAÑOL:
- ITALIANO:
- NEDERLANDS:
- SVENSKA:
- РУССКИЙ:
- 日本語:

To close the menu

1 Press the ▭ button once to return to the main MENU, and twice to return to normal viewing. If no buttons are pressed, the menu closes automatically after about 30 seconds.

To reset to English

2 Press the ⇥0⇤ (Reset) button while the LANGUAGE menu is displayed on the screen.

Selecting the Input Signal

You can connect two computers to this monitor using the video input 1 ⇦ and video input 2 ⇨ connectors. To select one of the two computers, use the ⇨ switch.

1 Move the switch to either 1 ⇦ or 2 ⇨

2 The selected connector appears on the screen for 3 seconds.

3 INPUT 1 (video input 1 connector ⇦ or INPUT 2 (video input 2 connector ⇨ appears on the screen.

NOTE   If no signal is input to the selected connector, the message NO INPUT SIGNAL appears on the screen. After a few seconds, the monitor enters power saving mode. If this happens, switch to the other connector.

Automatically sizing and centering the picture

You can easily adjust the picture to fill the screen by pressing the ⊡ (auto sizing and centering) button.

1   Press the ⊡ button.

The picture automatically fills the screen.
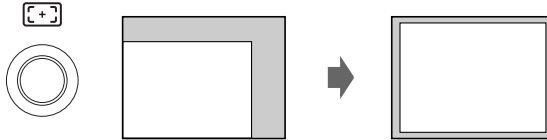
NOTE   This function is intended for use with a computer that provides a full-screen picture. It may not work properly if the background color is dark or if the input picture does not fill the screen to the edges.

Pictures with an aspect ratio of 5:4 (resolution: 1280×1024 or 1600×1280) are displayed at their actual resolution and do not fill the screen to the edges.
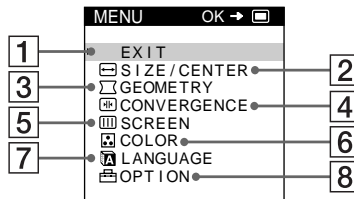
The displayed image moves for a few seconds when the ⊡ button is pressed. This is not a malfunction.

Customizing Your Monitor

You can make numerous adjustments to your monitor using the On-Screen Menu.

Navigating the menu

1 Press the ⬜ button to display the main MENU on your screen.

```
MENU        OK → ⬜
  ● EXIT
  ⊟ SIZE / CENTER ●
  ⊠ GEOMETRY
  ⊞ CONVERGENCE ●
  ▥ SCREEN
  ▣ COLOR ●
  🄰 LANGUAGE
  ⊟ OPTION ●
```

1 → EXIT
2 → SIZE / CENTER
3 → GEOMETRY
4 → CONVERGENCE
5 → SCREEN
6 → COLOR
7 → LANGUAGE
8 → OPTION

2 Use the ⬇ / ⬆ and ⬜ buttons to select one of the following menus

3 Select EXIT to close the menu.

Exit 1

Selects EXIT to close the menu.

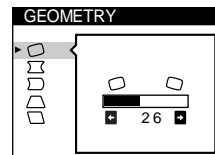### Size/Center 2

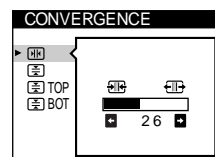Selects the SIZE/CENTER menu to adjust the picture's size, centering or zoom.

```
SIZE / CENTER
▸ ↔
  ↕
  ▯
  ▤
  ▦            ↔      ↔
              ◀  26  ▶
```
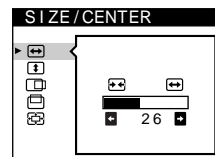
Geometry 3

Selects the GEOMETRY menu to adjust the picture's rotation and shape.

```
GEOMETRY
▸ ○
  ⊟
  ▱
  ▱            ▱      ▱
              ◀  26  ▶
```

Convergence 4

Selects the CONVERGENCE menu to adjust the picture's horizontal and vertical convergence.

```
CONVERGENCE
▸ ⊞
  ⊞
  ⊞ TOP
  ⊞ BOT        ⊞      ⊞
              ◀  26  ▶
```
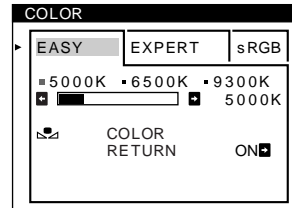
Screen ⑤

Selects the SCREEN menu to adjust the picture's quality. You can adjust the landing (the color purity in the 4 corners) and moire cancellation effect.

```
SCREEN
▸ ▢  ◂   LANDING
  ▢
  ▢         ▢
  ▢      ◂ 26 ▸
  ▥
```
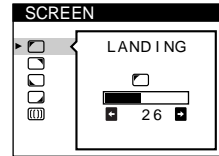
Color ⑥

Selects the COLOR menu to adjust the picture's color temperature. You can use this to match the colors of a printed picture.

```
COLOR
▸ EASY      EXPERT     sRGB

  ▪5000K  ▪6500K  ▪9300K
  ◂ ▬▬       ▸   5000K

  ▨      COLOR
         RETURN      ON▸
```
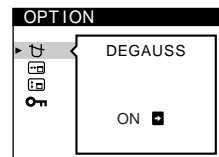
Language ⑦

Selects LANGUAGE to choose the language for the on-screen menu.

```
LANGUAGE

▸ ENGLISH
  FRANÇAIS
  DEUTSCH
  ESPAÑOL
  ITALIANO
  NEDERLANDS
  SVENSKA
  РУССКИЙ
  日本語
```

Option ⑧

Selects OPTION to adjust the monitor options. The options include:

•   degaussing the screen
•   changing the on-screen menu position
•   locking the controls

```
OPTION
▸ ↻  ◂   DEGAUSS
  ▣
  ▣
  ⊶        ON ▸
```

Customizing Your Monitor

Displaying the current input signal

The horizontal and vertical frequencies of the current input signal are displayed in the main MENU. If the signal matches one of the monitor's factory preset modes, the resolution is also displayed.

```
MENU            OK ➜ ◼
 ►   EXIT
    S I ZE / CENTER
    GEOMETRY
    CONVERGENCE
    SCREEN
    COLOR
    L ANGUAGE
    OPT I ON
```

horizontal and vertical frequencies of the current input

(6 8 . 7 k H z /   8 5 H z)
(1 0 2 4 x   7 6 8)

resolution of the current input signal
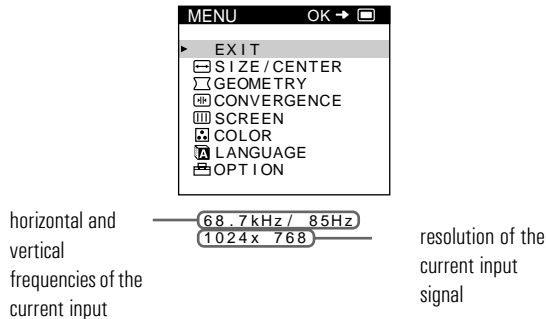
Adjusting the brightness and contrast

Brightness and contrast adjustments are made using a separate BRIGHTNESS/CONTRAST menu.

These settings are stored in memory for the signals from the currently selected input connector.

1   Press either the ☼ (brightness) ⇓ / ⇑ or ◐ (contrast) ⇐ / ⇒ button.

The BRIGHTNESS/CONTRAST menu appears on the screen.

```
BR I GHTNESS / CONTRAST

      ☼              ◐
 ▪   26  ▪      ▪   26  ▪
```
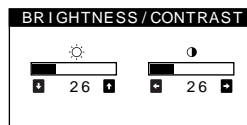
2   Press the ☼ (brightness) ⇓ / ⇑ buttons to adjust the brightness or ◐ (contrast) ⇐ / ⇒ buttons to adjust the contrast.

If you are using the sRGB mode

If you selected the sRGB mode in the COLOR menu, the following BRIGHTNESS/CONTRAST menu appears on the screen.

```
BRIGHTNESS/CONTRAST

      ☼              ◗
   ⬛  56  ⬛      ⬛   76  ⬛

   sRGB  :  ☼ 56  ◗ 76
```

For more information about using the sRGB mode, see page 21.

The menu automatically disappears after about 3 seconds.

Adjusting the size of the picture (SIZE/CENTER)

This setting is stored in memory for the current input signal.

1   Press the ⬜ button. The main MENU appears on the screen.

2   Press the ⬇ / ⬆ buttons to highlight ↔ SIZE/CENTER and press the ⬜ button again.

The SIZE/CENTER menu appears on the screen.

3   Press the ⬇ / ⬆ buttons to select ↔ for horizontal adjustment, or ⬍ for vertical adjustment. Then press the ⬅ / ⮕ buttons to adjust the size.

Adjusting the centering of the picture (SIZE/CENTER)

This setting is stored in memory for the current input signal.

1   Press the ⬜ button. The main MENU appears on the screen.

2   Press the ⬇ / ⬆ buttons to highlight ↔ SIZE/CENTER and press the ⬜ button again. The SIZE/CENTER menu appears on the screen.

3   Press the ⬇ / ⬆ buttons to select ⬓ for horizontal adjustment, or ⬒ for vertical adjustment. Then press the ⬅ / ⮕ buttons to adjust the centering.

Enlarging or reducing the picture (ZOOM)

This setting is stored in memory for the current input signal.

1   Press the ⬜ button. The main MENU appears on the screen.

Customizing Your Monitor

2   Press the ⇓ / ⇑ buttons to highlight ↔ SIZE/CENTER and press the ▭ button again. The SIZE/CENTER menu appears on the screen.

3   Press the ⇓ / ⇑ buttons to select ▣ (zoom), and press the ⇐ / ⇒ buttons to enlarge or reduce the picture.

NOTE   Adjustment stops when either the horizontal or vertical size reaches its maximum or minimum value.

Adjusting the shape of the picture (GEOMETRY)

The GEOMETRY settings allow you to adjust the rotation and shape of the picture.

The ◯ (rotation) setting is stored in memory for all input signals. All other settings are stored in memory for the current input signal.

1   Press the ▭ button. The main MENU appears on the screen.

2   Press the ⇓ / ⇑ buttons to highlight ▱ GEOMETRY and press the ▭ button again. The GEOMETRY menu appears on the screen.

3   Press the ⇓ / ⇑ buttons to select the desired adjustment item. Then press the ⇐ / ⇒ buttons to make the adjustment.

Select	To
◯	rotate the picture
⊐⊏	expand or contract the picture sides
⊐	shift the picture sides to the left or right
⊓	adjust the picture width at the top of the screen
⊔	shift the picture to the left or right at the top of the screen

Adjusting the convergence (CONVERGENCE)

The CONVERGENCE settings allow you to adjust the quality of the picture by controlling the convergence. The convergence refers to the alignment of the red, green, and blue color signals.

If you see red or blue shadows around letters or lines, adjust the convergence.

These settings are stored in memory for all input signals.

1   Press the ▭ button. The main MENU appears on the screen.

2   Press the ⇓ / ⇑ buttons to highlight ⊞ CONVERGENCE and press the ⊟ button again. The CONVERGENCE menu appears on the screen.

3   Press the ⇓ / ⇑ buttons to select the desired adjustment item. Then press the ⇐ / ⇒ buttons to make the adjustment.

Select	To
⊞	horizontally shift red or blue shadows
⊠	vertically shift red or blue shadows
⊠ TOP V CONVER TOP	vertically shift red or blue shadows at the top of the screen
⊠ BOT V CONVER BOTTOM	vertically shift red or blue shadows at the bottom of the screen

Adjusting the quality of the picture (SCREEN)

The SCREEN settings allow you to adjust the quality of the picture by controlling the moire and the landing.

• If the color is irregular at the corners of the screen, adjust the landing.

• If elliptical or wavy patterns appear on the screen, cancel the moire.

The CANCEL MOIRE and MOIRE ADJUST settings are stored in memory for the current input signal. All other settings are stored in memory for all input signals.

1   Press the ⊟ button. The main MENU appears on the screen.

2   Press the ⇓ / ⇑ buttons to highlight ⊞ SCREEN and press the ⊟ button again. The SCREEN menu appears on the screen.

3   Press the ⇓ / ⇑ buttons to select the desired adjustment item. Then press the ⇐ / ⇒ buttons to make the adjustment.

Select	To
⬜ LANDING	reduce any color irregularities in the screen's top left corner to a minimum.
⬜ LANDING	reduce any color irregularities in the screen's top right corner to a minimum.
⬜ LANDING	reduce any color irregularities in the screen's bottom left corner to a minimum.
⬜ LANDING	reduce any color irregularities in the screen's bottom right corner to a minimum.
[(( ))] CANCEL MOIRE	turn the moire cancellation function ON or OFF. ⊣(( ))⊢ (MOIRE ADJUST) appears in the menu when you select ON.
⊣(( ))⊢ MOIRE ADJUST	adjust the degree of moire cancellation until the moire is at a minimum.

NOTE   Moire is a type of natural interference which produces soft, wavy lines on your screen. It may appear due to interference between the pattern of the picture on the screen and the phosphor pitch pattern of the monitor.

Example of moire

NOTE   The picture may become fuzzy when CANCEL MOIRE is set to ON.

Adjusting the color of the picture (COLOR)

The COLOR settings allow you to adjust the picture's color temperature by changing the color level of the white color field. Colors appear reddish if the temperature is low, and bluish if the temperature is high. This adjustment is useful for matching the monitor's color to a printed picture's colors.

1   Press the ⬜ button. The main MENU appears on the screen.

2   Press the ⇩ / ⇧ buttons to highlight ▣ COLOR and press the ▭ button again. The COLOR menu appears on the screen.

3   Press the ⇦ / ⇨ buttons to select the adjustment mode. There are three types of adjustment modes, EASY, EXPERT and sRGB.

4   Press the ⇩ / ⇧ buttons to select the desired adjustment item. Then press the ⇦ / ⇨ buttons to make the adjustment. Adjust the selected mode according to the following instructions.

EASY mode
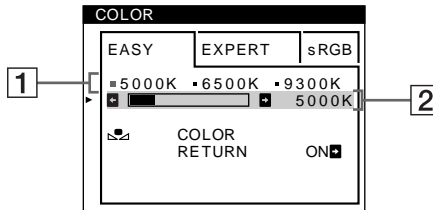
```
   COLOR
  ┌──────────────────────────────────┐
  │  EASY      EXPERT      sRGB       │
1 │  ▪5000K  ▪6500K  ▪9300K           │ 2
  │  ▶ +■■■■■■■■■■■■■+   5000K         │
  │  ↘      COLOR                     │
  │         RETURN       ON▪          │
  └──────────────────────────────────┘
```

1   Press the ⇩ / ⇧ buttons to select color temperature 1 , then press the ⇦ / ⇨ buttons to select a color temperature.

The preset color temperatures are 5000K, 6500K, and 9300K. Since the default setting is 9300K, the whites will change from a bluish hue to a reddish hue as the temperature is lowered to 6500K and 5000K.

2   If necessary, fine tune the color temperature.
Press the ⇩ / ⇧ buttons to select color temperature adjustment 2 then press the ⇦ / ⇨ buttons to fine tune the color temperature.

If you fine tune the color temperature, the new color settings are stored in memory for each of the three color temperatures and item 1 of the on-screen menu changes as follows.

•   [5000K]t[▣ 1]
•   [6500K]t[▣ 2]
•   [9300K]t[▣ 3]

EXPERT mode

You can make additional adjustments to the color in greater detail by selecting the EXPERT mode.
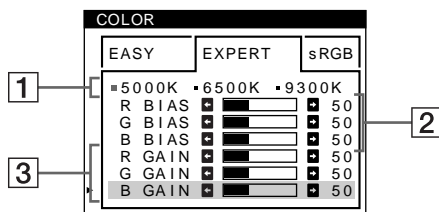
```
COLOR
 ┌─────────┬──────────┬────────┐
 │  EASY   │  EXPERT  │  sRGB  │
 └─────────┴──────────┴────────┘
1──  ▪5000K  ▪6500K  ▪9300K
     R BIAS  ◄ ■        ► 50
     G BIAS  ◄ ■        ► 50            2
     B BIAS  ◄ ■        ► 50
     R GAIN  ◄ ■        ► 50
     G GAIN  ◄ ■        ► 50
3──  B GAIN  ◄ ■        ► 50
```

1 Press the ⇓ / ⇑ buttons to select color temperature 1 , then press the ⇐ / ⇒ buttons to select a color temperature.

2 Press the ⇓ / ⇑ buttons to select adjustment 2 , then press the ⇐ / ⇒ buttons to adjust the BIAS (black level). This adjusts the dark areas of an image.

3 Press the ⇓ / ⇑ buttons to select adjustment 3 , then press the ⇐ / ⇒ buttons to adjust the GAIN (white level). This adjusts the light areas of an image.
   You can adjust the R (red), G (green), B (blue) component of the input signal when making changes to items 2 and 3 .
   If you fine tune the color temperature, the new color settings are stored in memory for each of the three color temperatures and item 1 of the on-screen menu change as follows.

- [5000K]t[⊡ 1]
- [6500K]t[⊡ 2]
- [9300K]t[⊡ 3]

Setting the color temperature for each of the video input connectors

You can set the fine tuning of the color temperature in EASY or EXPERT mode for each of the video input connectors (INPUT 1 and INPUT 2).

1 Select the same adjustment mode and color temperature in the COLOR menu for both INPUT 1 and INPUT 2.

2 Fine tune the color temperature in each menu for INPUT 1 and INPUT 2. The settings are stored in memory for each of the INPUT 1 and INPUT 2 connectors.

sRGB mode

The sRGB color setting is an industry standard color space protocol designed to correlate the displayed and printed colors of sRGB compliant computer products. To adjust the colors to the sRGB profile, simply select sRGB mode in the COLOR menu. However, in order to display the sRGB colors correctly (γ=2.2, 6500K), you must set your computer to the sRGB profile and adjust the brightness (☼) and contrast to the numbers shown in the menu. For information on how to change the brightness (◐) and contrast, see page 14.

NOTE   Your computer and other connected products (such as a printer), must be sRGB compliant.

```
COLOR
┌─────────────────────────────────┐
│ ► EASY      EXPERT      sRGB     │
│                                  │
│   ☼ :56  ◐ :76 FOR    sRGB      │
│   🖳    COLOR                    │
│        RETURN         ON■        │
│                                  │
└─────────────────────────────────┘
```
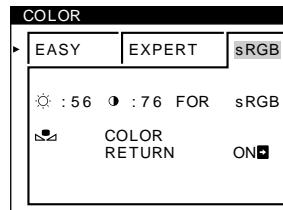
Restoring the color from the EASY or sRGB menus

The colors of most display monitors tend to gradually lose brilliance over several years of service. The COLOR RETURN feature found in the EASY and sRGB menus allows you to restore the color to the original factory quality levels. The explanation below explains how to restore the monitor's color from the EASY menu.

1   Press the ⇐ / ⇒ buttons to select EASY or sRGB mode.

2   First press the ⇓ / ⇑ buttons to select 🖳 (COLOR RETURN), then press the ⇒ button. The picture disappears while the color is being restored (about 2 seconds). After the color is restored, the picture reappears on the screen.

NOTE   Before using this feature, the monitor must be in normal operation mode (green power indicator on) for at least 30 minutes. If the monitor goes into power saving mode, you must return the monitor to normal operation mode and wait for 30 minutes for the monitor to be ready.

You may need to adjust your computer's power saving settings to keep the monitor in normal operation mode for the full 30 minutes. If the monitor is not ready, the following message will appear. The

```
┌─────────────────────────────────┐
│ COLOR                           │
│                                 │
│ ┌──────────┬──────────┬───────┐ │
│ │ EASY     │ EXPERT   │ sRGB  │ │
│ └──────────┴──────────┴───────┘ │
│   ■5000K  ▪6500K  ▪9300K        │
│ ► ⊞ ▬▬▬▬▬▬       ⊞   5000K      │
│                                 │
│  ⬓       COLOR                  │
│          RETURN                 │
│      ❶ AVAILABLE                │
│          AFTER WARM UP          │
└─────────────────────────────────┘
```
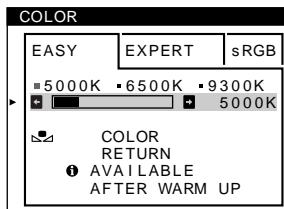
monitor may gradually lose its ability to perform this function due to the natural aging of the picture tube.

Additional settings (OPTION)

You can manually degauss the monitor, change the menu position, and lock the controls.

1   Press the ▭ button. The main MENU appears on the screen.

2   Press the ⇩ / ⇧ buttons to highlight ▭ OPTION and press the ▭ button again. The OPTION menu appears on the screen.

3   Press the ⇩ / ⇧ buttons to select the desired adjustment item. Adjust the selected item according to the following instructions.

Degaussing the screen

The monitor is automatically degaussed when the power is turned on.

To manually degauss the monitor

1   Press the ⇩ / ⇧ buttons to select ⊔ (DEGAUSS). Then press the ⇨ button.

2   The screen is degaussed for about 2 seconds. If a second degauss cycle is needed, allow a minimum interval of 20 minutes for the best result.

Changing the menu position

Change the menu position if it is blocking an image on the screen.

To change the menu on-screen position:

Press the ⇩ / ⇧ buttons to select ⬌⊟ (OSD H POSITION) for horizontal adjustment, or ⬍⊟ (OSD V POSITION) for vertical adjustment. Then press the ⇦ / ⇨ buttons to shift the on-screen menu.

Locking the controls

To protect adjustment data by locking the controls

Press the ⇩ / ⇧ buttons to select (CONTROL LOCK). Then press the ⇒ button to select ON.

Only the ⏻ (power) switch, EXIT, and (CONTROL LOCK) of the 🗔 OPTION menu will operate. If any other items are selected, the mark appears on the screen.

To cancel the control lock

Repeat the procedure above and set (CONTROL LOCK) to OFF.

Resetting the adjustments

This monitor has three reset methods. Use the ->0<- (reset) button to reset the adjustments.

Resetting a single adjustment item

Use the ▭, ⇩ / ⇧ buttons to select the adjustment item you want to reset, and press the ->0<- (reset) button.

Resetting all of the adjustment data for the current input signal

Press the ->0<- (reset) button when no menu is displayed on the screen.

Note that the following items are not reset by this method:

- on-screen menu language
- adjustment mode in the COLOR menu (EASY, EXPERT, sRGB)
- on-screen menu position
- control lock

Resetting all of the adjustment data for all input signals

Press and hold the ->0<- (reset) button for more than two seconds.

The ->0<- (reset) button does not function when (CONTROL LOCK) is set to ON.

Minimizing Eye Strain

To avoid screen flicker and minimize eye strain, use the highest supported image refresh rate for the chosen resolution. It is recommended that you use a refresh rate of 85 Hz. The image refresh rate is the number of times per second that the image is refreshed.

Minimizing Energy Consumption

If your computer supports VESA monitor power management (available on many HP computers), you can minimize the power consumed by the monitor. There are two power saving modes:

- Suspend mode[1] (uses less or equal than 10W). In this mode, the monitor's front panel indicator light is amber.
- Active off mode[2] (uses less or equal than 1W). In this mode, the monitor's front panel indicator light is amber.

To set these power saving modes, refer to the manual that came with your computer. If your screen is not displaying an image, check the front panel indicator light first as your monitor may be in a power saving mode.

Supported Video Modes

Your monitor comes with the standard modes shown in the table below. It also supports intermediate video modes. With the intermediate modes, the displayed image may need to be optimized using the buttons on the front panel. All modes are non-interlaced. Your monitor is GTF* compatible.

Factory Preset Modes:

Resolution	Refresh Rate/Hz
640 x 400	70
640 x 480	60, 85
800 x 600	85
1024 x 768	75, 85
1280 x 1024	75, 85
1600 x 1200 GTF*	85
1800 x 1440	80

1. Suspend mode is activated when vertical sync is cut by the video controller.
2. Active off mode is activated when both vertical and horizontal sync are cut by the video controller.
3. GTF - General Timing Formula.

Troubleshooting

Refer to this section, before contacting technical support.

If thin lines appear on your screen (damper wires)

The lines you are experiencing on your screen are normal for the Trinitron monitor and are not a malfunction. These are shadows from the damper wires used to stabilize the aperture grille and are most noticeable when the screen's background is light (usually white). The aperture grille is the essential element that makes a Trinitron picture tube unique by allowing more light to reach the screen, resulting in a brighter, more detailed picture.

Damper wires
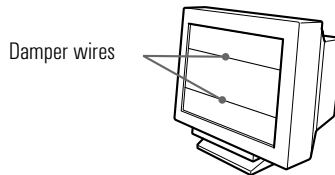
On-screen messages

If there is something wrong with the input signal, one of the following messages appears on the screen.

If NO INPUT SIGNAL appears on the screen

```
INFORMATION
MONITOR IS WORKING
INPUT   1:
NO INPUT  SIGNAL
 ·ACTIVATE USING PC
 ·CHECK INPUT SELECTOR

 ·CHECK SIGNAL CABLE
WHITE
RED
GREEN
BLUE
```
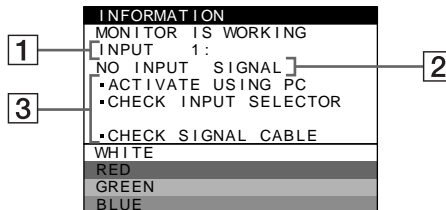
1   The selected connector.
     This message shows the currently selected connector (INPUT 1 or INPUT 2).

2   The input signal condition
     NO INPUT SIGNAL. This indicates that no signal is input, or that no signal is input from the selected connector.

3   The Remedies
     One or more of the following messages may appear on the screen.

• If ACTIVATE USING PC appears on the screen, try pressing any
  key on the computer, and confirm that your computer's graphic
  board is completely seated in the correct bus slot.
• If CHECK INPUT SELECTOR appears on the screen, try changing
  the input signal (page 10).
• If CHECK SIGNAL CABLE appears on the screen, check that the
  monitor is correctly connected to the computer (page 4).

If OUT OF SCAN RANGE appears on the screen

```
           ┌─────────────────────────────┐
           │ INFORMATION                 │
           │ MONITOR  IS  WORKING        │
 ┌─┐  ┌────│ INPUT    1:130.0kHz/  75Hz  │
 │1│──┤    │                             │
 └─┘  └────│ OUT  OF  SCAN  RANGE ┐      │    ┌─┐
           │                      └──────│────│2│
 ┌─┐  ┌────│ CHANGE  SIGNAL  TIMING      │    └─┘
 │3│──┤    │                             │
 └─┘  └────│─────────────────────────────│
           │ WHITE                       │
           │ RED                         │
           │ GREEN                       │
           │ BLUE                        │
           └─────────────────────────────┘
```
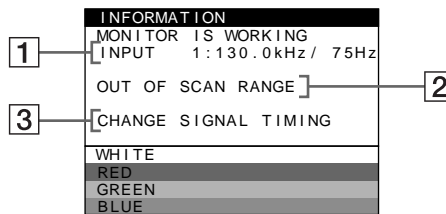
The selected connector and the frequencies of the current input signal

This message shows the currently selected connector
(INPUT 1 or INPUT 2). If the monitor recognizes the frequencies of
the current input signal, the horizontal and vertical frequencies are
also displayed.

The input signal condition

OUT OF SCAN RANGE

This indicates that the input signal is not supported by the monitor's
specifications.

The Remedies

CHANGE SIGNAL TIMING appears on the screen. If you are
replacing an old monitor with this monitor, reconnect the old
monitor. Then adjust the computer's graphics card so that the
horizontal frequency is between 30 - 121 kHz, and the vertical
frequency is between 48 - 160 Hz.

No picture and LED is off

- Check if monitor is switched ON
- Check if power cord is properly connected
- Check if electrical outlet is connected
- Test if monitor works on another PC previously set to monitor's supported resolution

No picture and LED is on

- Check if monitor is not in power saving mode
- Try changing the video input selection
- Adjust contrast and brightness through Menu using the control buttons
- Check if PC is switched on
- Check if video cable has no bent pins
- Test if monitor works

Colors are not pure

- Degauss your monitor
- Shut down your monitor and switch it on after 30 minutes

Picture is not centered

- Adjust picture through Menu using the control buttons

Picture is fuzzy

- Use the Recall function
- Reduce contrast through Menu using the control buttons
- Adjust moire reduction to zero

Technical Specifications

PICTURE TUBE	Size	21-inch, viewable image size 19.8-inch
	Aperture Grill Pitch	0.24 mm
	Face Plate	wide anti-reflective anti static-coating
INTERFACE	Detachable Video Cable with 15-pin mini D-SUB Connector	
SCANNING FREQUENCY	Horizontal	30 to 121 kHz
	Vertical	48 to 160 Hz
MAX. RESOLUTION	1800 x 1440 (80 Hz)	
RECOMMENDED RESOLUTION:	1600 x 1200 (85 Hz)	
WARM-UP TIME	30 minutes to reach optimum performance level	
Max PIXEL CLOCK	$<$ 300 MHz	
IMAGE SIZE	Standard Size: 388 (W) $\times$ 291 (H)mm Maximum Size: 402 (W) $\times$ 301 (H)mm	
POWER MANAGEMENT	On 145W (max)	Constant green LED
	Standby mode 15W (max)	Amber/Green blinking LED
	Suspend mode10W (max)	Amber/Green blinking LED
	Active Off 1W (max)	Constant Amber LED
	Power Off 0W	LED is Off
POWER SOURCE	AC 90 to 264 V, 50/60 Hz (max current) 2A	
OPERATING ENVIRONMENT	Temperature	10°C to 40 °C
	Humidity	10% RH through 80% RH (without condensation)
STORAGE ENVIRONMENT	Temperature	0 °C to 60 °C
	Humidity	5% RH through 90% RH (without condensation)
SHIPPING ENVIRONMENT with PACKAGING	Temperature:	- 40° to + 60°
	Humidity	5% RH through 95%° RH (without condensation)
CABINET DIMENSIONS	Approx 491 (H) 498 (W) 478 (D) mm	
WEIGHT	Approx 32 kg	
TILT/SWIVEL STAND	Tilt Angle	- 5° to 15°
	Swivel Angle	- 90° to 90°

Care and Cleaning

Do not place anything on top of the monitor. Doing so may block the monitor vents and cause damage to the monitor due to overheating. Do not let liquid get on or into the monitor. To maximize screen life and prevent damage to the picture tube (such as burned phosphor due to leaving the same image on the screen for a long time), it is recommended that you:

- Use the monitor power management system (on HP computers) or a screen saver program.
- Avoid setting contrast and brightness to their maximum levels for prolonged periods.
- If you do not have a power management system or a screen saver program, switch the monitor off or reduce the brightness and contrast to minimum levels when the monitor is not in use.

Your monitor has an anti-glare, anti-static screen coating. To prevent damage to the monitor screen's coating, use a regular household glass cleaner when cleaning the screen. To clean the screen:

1 Switch the monitor off and remove the power plug (pull the plug, not the cable).
2 Wet a soft cotton cloth with the cleaning solution and gently wipe the screen. Do not spray cleaner onto the screen because the cleaner may drip inside the monitor.
3 Dry with a clean, soft cotton cloth. Do not use any type of abrasive pad, alkaline cleaner, scouring powder or solvents such as alcohol or benzine as they might damage the anti-reflective coating.

Environmental Information

HP has a strong commitment toward the environment. Your HP monitor has been designed to respect the environment as much as possible.

HP can also take back your old monitor for recycling when it reaches the end of its useful life. In fact, HP has a product take-back program in several countries. The collected equipment is sent to one of HP's recycling facilities in Europe or the USA. As many parts as possible are reused. The remainder is recycled. Special care is taken for batteries and other potentially toxic substances, which are reduced to non-harmful components through a special chemical process. If you require more details about HP's product take-back program, contact your dealer or your nearest HP Sales Office.

Hardware Warranty

PART I - HP General Hardware Warranty

General

This HP Monitor Hardware Warranty Statement gives you, the customer, express warranty rights from HP, the manufacturer.

FOR CONSUMER TRANSACTIONS IN AUSTRALIA AND NEW ZEALAND: THE WARRANTY TERMS CONTAINED IN THIS STATEMENT, EXCEPT TO THE EXTENT LAWFULLY PERMITTED, DO NOT EXCLUDE, RESTRICT OR MODIFY AND ARE IN ADDITION TO THE MANDATORY STATUTORY RIGHTS APPLICABLE TO THE SALE OF THIS PRODUCT TO YOU.

THE LAWS OF YOUR COUNTRY MAY PROVIDE FOR DIFFERENT WARRANTY RIGHTS. IF SO, YOUR AUTHORIZED HP DEALER OR HP SALES AND SERVICE OFFICE CAN PROVIDE YOU WITH DETAILS.

Warranty repair or replacement.

Model	Warranty Period	Service Provided	
D8915	3 years - unless original end-user customer has otherwise agreed to a shorter period of warranty at the time of purchase.	Rest of World: On-site service for first year and return to HP or repair-authorized service center for the following two years.	A
		US and Canada only: Return to HP or a repair-authorized service center for three years.	B
		Europe only: 3 Year Next Business Day On-site Exchange (swap-out).	E
	1 year	Japan: return to HP or a repair-authorized service center for one year.	D

Hewlett-Packard (HP) warrants this monitor hardware product, or accessory against defects in materials and workmanship for the applicable warranty period stated above, commencing from the date of delivery of the product to the end-user customer.

HP does not warrant that the HP hardware will operate uninterrupted or error free.

If, during the product warranty period, HP is unable, within a reasonable time, to repair or replace your product to the condition as warranted, you will be entitled to a refund (in the amount of the product purchase price) upon prompt return of the product to your authorized HP dealer or other HP designate. Unless otherwise stated or agreed upon in writing with HP, all hardware components must be returned for refund with the entire system

may have been subject to prior incidental use. HP may repair or replace hardware products (i) with products which are equivalent in performance to the products being repaired or replaced but which may have been subject to prior use, or (ii) with products which may contain remanufactured parts equivalent to new in performance or parts which may have been subject to prior incidental use.

Proof of Purchase and Warranty Period

In order to receive service or support for your hardware product for the warranty period, proof of the original purchase date of the product may be required in order to establish the delivery date of your product. If the delivery date is not available, either the purchase date or the manufacturer's date (located on the product) becomes the beginning of the warranty period.

Limitation of Warranty

Warranty does not apply to defects resulting from: (a) improper or inadequate maintenance or calibration; (b) software, interfacing, parts or supplies not supplied by HP; (c) unauthorized repair, maintenance, modification or misuse; (d) operation outside of the published operating specifications for the product; (e) improper site preparation or maintenance; or (f) such other exclusions as may be expressly set forth in this Warranty Statement.

HP MAKES NO OTHER EXPRESS WARRANTY, WHETHER WRITTEN OR ORAL, WITH RESPECT TO THIS PRODUCT.

TO THE EXTENT ALLOWED BY APPLICABLE LOCAL LAW, ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE IS LIMITED TO THE DURATION OF THE EXPRESS WARRANTY SET FORTH ABOVE.

Limitation of Liability and Remedies

TO THE EXTENT ALLOWED BY APPLICABLE LOCAL LAW, THE REMEDIES IN THIS WARRANTY STATEMENT ARE YOUR SOLE AND EXCLUSIVE REMEDIES. IN NO EVENT SHALL HP BE LIABLE FOR LOSS OF DATA OR FOR DIRECT, INDIRECT, SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGE, WHETHER BASED ON WARRANTY CONTRACT, TORT, OR ANY OTHER LEGAL THEORY.

The foregoing limitation of liability shall not apply in the event that any HP product sold hereunder is determined by a court of competent jurisdiction to be defective and to have directly caused bodily injury, death, or property damage. To the extent allowed by applicable local law, HP's liability for property damage does not exceed the greater of $50,000 or the purchase price of the specific product that caused such damage.

PART II - Year 2000 Warranty

Subject to all of the terms and limitations of the HP Limited Warranty Statement provided with this HP Product, HP warrants that this HP Product will be able to accurately process date data (including, but not limited to, calculating, comparing, and sequencing) from, into, and between the twentieth and twenty-first centuries, and the years 1999 and 2000, including leap year calculations, when used in accordance with the Product documentation provided by HP (including any instructions for installing patches or upgrades), provided that all other products (e.g. hardware, software, firmware) used in combination with such HP Product(s) properly exchange date data with it. The duration of the Year 2000 warranty extends through January 31, 2001.

Regulatory Information

DECLARATION OF CONFORMITY

according to ISO/IEC Guide 22 and EN 45014

Manufacturer's Name: HEWLETT-PACKARD France

Manufacturer's Address: 5, Avenue Raymond Chanas - EYBENS

38053 GRENOBLE CEDEX 09 -FRANCE

Declares, that the products:

Product Name: HP 21-inch Color Monitor

Model Number: D8915* (the "*" can be any alphanumeric character)

Conform(s) to the following Product Specifications:

SAFETY -International: IEC 60950:1991 + A1 + A2 +A3 +A4 / GB4943-1995

-Europe: EN 60950:1992 + A1 + A2 +A3 + A4 +A11

ELECTRO MAGNETIC COMPATIBILITY

-CISPR 22:1993 +A1+ A2 / EN 55022:1994 + A1+ A2 Class B[1]

-EN 50082-1:1992

IEC 801-2:1992 / prEN 55024-2:1992 - 4kV CD, 8 kV AD
IEC 801-3:1984 - 3V/m   - 3V/m
IEC 801-4:1988 / prEN 55024-4:1993 - 1 kV Power Lines

- IEC 61000-3-3:1994 / EN 61000-3-3:1995

- GB9254-1998

- FCC Title 47 CFR, Part 15 class B[1]
- ICES-003, Issue 3
- VCCI-B
- AS/NZ 3548:1995

Products bearing the CE marking [2] also comply with:

- IEC 61000-3-2:1995 / EN 61000-3-2:1995

Those products comply with the requirements of the following Directives and carry the CE mark accordingly:
EMC Directive 89/336/EEC and Low Voltage Directive 73/23/EEC both amended by the Directive 93/68/EEC.

[1] This device complies with part 15 of the FCC rules. Operation is subject to the following two conditions:

(1) This device may not cause harmful interference, and

(2) This device must accept any interference received, includi   cause undesired
operation.

[2] All products sold in the European Economic Area (EEA) bear the

Jean-Charles MIARD
Quality Manager

Grenoble, Sept 2000

For Compliance Information ONLY, contact:
USA contact: Hewlett-Packard Company, Corporate Product Regulations Manager, 3000 Hanover
Street, Palo Alto, CA 94304. (Phone (650) 857-1501).

Notice for the USA: FCC Class B Statement

Federal Communications Commission Radio Frequency Interference Statement Warning:

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the distance between the equipment and the receiver.
- Connect the equipment to an outlet on a different circuit to the one the receiver is connected to.
- Consult your dealer or an experienced radio/TV technician for help.

Hewlett-Packard's FCC Compliance Tests were conducted using HP-supported peripheral devices and HP shielded cables, such as those you receive with your system. Changes or modifications not expressly approved by Hewlett-Packard could void the user's authority to operate the equipment.

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Safety Warning for USA

If the power cord is not supplied with your monitor, select the proper power cord according to your national electric specifications.

- USA: use a UL listed type SVT detachable power cord

Notice for Canada

This Class "B" digital apparatus complies with all requirements of the Canadian Interference-Causing Equipment Regulations (ICES.003).

Cet appareil numérique de la Classe B est conforme à la norme NMB-003 du Canada.

X-Ray Radiation Notice

When operating, this product emits x-rays; however, it is well shielded and meets the safety and health requirements of various countries, such as the Radiation Act of Germany and the Radiation Control for Health and Safety Act of the United States. Radiation emitted by this product is less than 0.1 mR/hr (1uSv/hr) at a distance of 10 centimeters from the surface of the cathode ray tube. The x-ray radiation primarily depends on the characteristics of the cathode ray tube and its associated low voltage and high voltage circuitry. Internal controls have been adjusted to ensure safe operation. Only qualified personnel should perform any internal adjustments as specified in the service manual for this product. Replace the cathode ray tube with an identical CRT only.

Notice for Korea

사용자 안내문 (B급기기)
이 기기는 비업무용으로 전자파장해 검정을 받은
기기로서, 주거지역에서는물론 모든 지역에서
사용할 수 있습니다.

Notice for Germany

Hinweis für Deutschland: Geräuschemission
Lärmangabe nach Maschinenlärmverordnung - 3 GSGV
(Deutschland)
LpA < 70db am Arbeitsplattz normaler Betrieb nach EN27779:
11.92

Notice for Japan (Class B)

この装置は，情報処理装置等電波障害自主規制協議会（ＶＣＣＩ）の基準
に基づく クラスＢ情報技術装置です。この装置は，家庭環境で使用すること
を目的としていますが，この装置がラジオやテレビジョン受信機に近接して
使用されると，受信障害を引き起こすことがあります。
　取り扱い説明書に従って正しい取り扱いをして下さい。

TCO 99

Congratulations! You have just purchased a TCO'99 approved and labelled product! Your choice has provided you with a product developed for professional use. Your purchase has also contributed to reducing the burden on the environment and also to the further development of environmentally adapted electronics products.

Why do we have environmentally labelled computers?

In many countries, environmental labelling has become an established method for encouraging the adaptation of goods and services to the environment. The main problem, as far as computers and other electronics equipment are concerned, is that environmentally harmful substances are used both in the products and during their manufacture. Since it is not so far possible to satisfactorily recycle the majority of electronics equipment, most of these potentially damaging substances sooner or later enter nature.

There are also other characteristics of a computer, such as energy consumption levels, that are important from the viewpoints of both the work (internal) and natural (external) environments. Since all methods of electricity generation have a negative effect on the environment (e.g. acidic and climate-influencing emissions, radioactive waste), it is vital to save energy. Electronics equipment in offices is often left running continuously and thereby consumes a lot of energy.

What does labelling involve?

This product meets the requirements for the TCO'99 scheme which provides for international and environmental labelling of personal computers. The labelling scheme was developed as a joint effort by the TCO (The Swedish Confederation of Professional Employees), Svenska Naturskyddsforeningen (The Swedish Society for Nature Conservation) and Statens Energimyndighet (The Swedish National Energy Administration).

Approval requirements cover a wide range of issues: environment, ergonomics, usability, emission of electric and magnetic fields, energy consumption and electrical and fire safety.

The environmental demands impose restrictions on the presence and use of heavy metals, brominated and chlorinated flame retardants, CFCs (freons) and chlorinated solvents, among other things. The product must be prepared for recycling and the manufacturer is obliged to have an environmental policy which must be adhered to in each country where the company implements its operational policy.

The energy requirements include a demand that the computer and/or display, after a certain period of inactivity, shall reduce its power consumption to a lower level in one or more stages. The length of time to reactivate the computer shall be reasonable for the user.

Labelled products must meet strict environmental demands, for example, in respect of the reduction of electric and magnetic fields, physical and visual ergonomics and good usability.

Below you will find a brief summary of the environmental requirements met by this product. The complete environmental criteria document may be ordered from:

TCO Development

SE-114 94 Stockholm, Sweden

Fax: +46 8 782 92 07

Email (Internet): development@tco.se

Current information regarding TCO'99 approved and labelled products may also be

obtained via the Internet, using the address: http://www.tco-info.com/

Environmental requirements

Flame retardants

Flame retardants are present in printed circuit boards, cables, wires, casings and housings. Their purpose is to prevent, or at least to delay the spread of fire. Up to 30% of the plastic in a computer casing can consist of flame retardant substances. Most flame retardants contain bromine or chloride, and those flame retardants are chemically related to another group of environmental toxins, PCBs. Both the flame retardants containing bromine or chloride and the PCBs are suspected of giving rise to severe health effects, including reproductive damage in fish-eating birds and mammals, due to the bio-accumulative[1] processes. Flame retardants have been found in human blood and researchers fear that disturbances in foetus development may occur.

The relevant TCO'99 demand requires that plastic components weighing more than 25 grams must not contain flame retardants with organically bound bromine or chlorine. Flame retardants are allowed in the printed circuit boards since no substitutes are available.

Cadmium[2]

Cadmium is present in rechargeable batteries and in the colour-generating layers of certain computer displays. Cadmium damages the nervous system and is toxic in high doses. The relevant TCO'99 requirement states that batteries, the colour-generating layers of display screens and the electrical or electronics components must not contain any cadmium.

Mercury[2]

Mercury is sometimes found in batteries, relays and switches. It damages the nervous system and is toxic in high doses. The relevant TCO'99 requirement states that batteries may not contain any mercury. It also demands that mercury is not present in any of the electrical or electronics components associated with the labelled unit.

CFCs (freons)

The relevant TCO'99 requirement states that neither CFCs nor HCFCs may be used during the manufacture and assembly of the product. CFCs (freons) are sometimes used for washing printed circuit boards. CFCs break down ozone and thereby damage the ozone layer in the stratosphere, causing increased reception on earth of ultraviolet light with e.g. increased risks of skin cancer (malignant melanoma) as a consequence.

Lead[2]

Lead can be found in picture tubes, display screens, solders and capacitors. Lead damages the nervous system and in higher doses, causes lead poisoning. The relevant TCO'99 requirement permits the inclusion of lead since no replacement has yet been developed.

1. Bio-accumulative is defined as substances which accumulate within living organisms
2. Lead, Cadmium and Mercury are heavy metals which are Bio-accumulative.